

WHITING-PLOVER PAPER MILL  
3243 Whiting Road  
Whiting  
Portage County  
Wisconsin

HAER NO. WI-56 HAER  
WIS  
49-WHIT,  
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
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HISTORIC AMERICAN ENGINEERING RECORD  
WHITING-PLOVER PAPER MILL

I. INTRODUCTION

**Location:** The Whiting-Plover Paper Mill is located at 3243 Whiting Road in Whiting, Wisconsin. It is located in the  $W\frac{1}{2}$ ,  $NW\frac{1}{4}$ ,  $NW\frac{1}{4}$ , Sec. 16 and into the  $E\frac{1}{2}$ ,  $NE\frac{1}{4}$ ,  $NE\frac{1}{4}$ , Sec. 17, T23N, R8E, Portage County (Figs. 1-3). It was built at the confluence of the Plover and Wisconsin Rivers to take advantage of the water power potential at the site. The mill lies just south of the village of Whiting, a suburb of Stevens Point which grew as a result of the growth of the Whiting-Plover Paper Mill and the Wisconsin River Paper and Pulp Mill, which began operation one year earlier (1891) at a site about 1.6 km (1.0 mile) north of the Whiting-Plover Mill.

**Quad:** Whiting

**UTM:** 16/4928310/295760

**Date of Construction:** 1891 (portions added 1898, 1903, 1908, 1918, 1923-4, 1941, and 1957; modified in 1912, 1922)

**Present Owner:** Kimberly-Clark Corporation  
1400 Holcomb Bridge Road  
Roswell, Georgia

**Significance:** The Whiting-Plover mill is one of the oldest mills on the Wisconsin River. Since 1892 it has been used for the production of fine papers, primarily from ragstock. The mill is associated with George A. Whiting, a key figure in the early history of the Wisconsin paper industry.

**Historian:** Phil Salkin, Archaeological Consulting and Services, and Gordon Orr, August 1988.

## I. HISTORICAL NARRATIVE

### A. Historical Significance to the Wisconsin Paper Industry

The Whiting-Plover Paper Mill represents an episode in the development of the paper industry in Wisconsin and the United States as a whole. This development dates back to the construction of the first paper mill in Philadelphia in 1690 (Weeks 1916 and Smith 1970). The mill has historical significance to the Wisconsin River Valley and to the paper industry in Wisconsin as a whole. The mill is mentioned in Cultural Resources Management in Wisconsin: Vol. 2, a manual for historic properties in the state (1986).

To understand the significance of the Whiting-Plover Paper Mill, it is necessary to place it in the perspective of the development of the paper industry as a whole.

The paper industry in Wisconsin can be divided into three phases. The first concerned the initial development which began in 1848, with the construction of the Ludington and Garland Steam Mill in Milwaukee. This plant was followed by the Richmond Brothers Mill in Appleton in 1853. This mill was important in that the owners became important in the foundation and operation of other early mills (Howard Publishing Co. 1948: 7). In 1855, the first of several mills opened on the Rock River in Beloit, followed in 1857 by a mill in Whitewater. Other mills were built in the Milwaukee area between 1855 and 1864. These early mills were mostly small ventures, with a limited production of coarse papers, such as newsprint and wrapping paper. Unlike the later mills, they utilized rags and straw for fiber (Weeks 1916: 280-281). Most of the mills were relatively short-lived, although the Richmond Mill was in operation until 1890.

The second phase of development occurred between 1872 and 1882, when there was an explosion of interest in the paper industry in the Fox River Valley. In this brief period, 20 paper companies opened, making use of the water power and relatively pure water offered by the region. This explosion had its predecessors in the 1853 Richmond Mill and the Neenah Paper Mill, which was begun in 1865-66. This latter mill, erected on the site of an earlier government sawmill, operated on ragstock, which was cut, dusted, bleached and then boiled with lime, liquor and stock (Lawson 1909: 275). The mill was run by Dr. Robinson, who is credited with making the paper industry in Wisconsin profitable and becoming the "father of the paper industry in Wisconsin" (Howard Publishing Co. 1948: 8).

Development of the paper industry in the Fox Valley was also spurred by the availability of a plentiful stock of wood. This was important because in 1872, the Keller Groundwood Process was

brought to Wisconsin by Col. Frambach. Developed in Germany in 1844, this process allowed fiber to be extracted from wood pulp, as opposed to taking fiber from recycled rags (Howard Publishing Co. 1948: 14, Wisconsin Paper Council 1979). The Eagle Mill in Kaukauna was the first to utilize the process. Some of the firms which trace their origins to this period of development in the Fox Valley include the Kimberly-Clark Company, the Neenah Paper Co., the Combined Locks Paper Co. and the Geo. A. Whiting Paper Co.

The Whiting-Plover Mill relates to the third phase of development of the paper industry in Wisconsin. Between 1882 and 1902, the industry saw its high points in terms of the number of new companies established. Eighty-one firms were organized and the industry spread from its center in the Fox River Valley to the Wisconsin and Chippewa River Valleys (Bowman 1940: 12). Both of those river valleys offered the water power and abundant forests desired by the paper makers of the period.

The paper industry in the Wisconsin River Valley was initiated in 1887 with the construction of the Centralia Water Power and Paper Co., established at Port Edwards by George A. Whiting, L.M. Alexander, Frank Garrison, George Steele and J.D. Witter (Lawson 1909: 279). This paper mill operated until 1912, when it was destroyed. The associated pulp mill continued in operation until 1923 (Montaba 1966: 5).

Four years later, another pulp-based mill was opened south of Stevens Point in the SE $\frac{1}{4}$ , Sec. 8, T23N, R8E (Fig. 3 and 4). Opened as the Wisconsin River Paper and Pulp Co., this mill produced newsprint and was the first mill in the Stevens Point area. It still continues to operate (in a much expanded and altered form) as a part of Consolidated Paper, Inc. A year later, this mill was joined by another at the confluence of the Wisconsin and Plover River. The subject of this study, the Whiting-Plover Paper Mill differed from the other mills built at the same time in that it utilized rags to produce fine papers, rather than using wood pulp for fiber.

Other early developments in the Wisconsin River Valley included the organization of the John Edwards Manufacturing Co. in 1890. Three years later, a mill was built at Nekoosa, followed by another mill at Port Edwards in 1896 (Howard Publishing Co. 1948: 24). These mills represent the beginnings of the Nekoosa-Edwards Paper Co. which consolidated in 1908. Other relatively early mills on the Wisconsin River included the Wausau Paper Mill at Brokaw (1900), the Grand Rapids Pulp and Paper Co. (1903) and the Rhinelander Paper Co. (1903).

After about 1903, the paper industry in Wisconsin continued to grow, but the emphasis changed from the formation of numerous small companies, to the growth and consolidation of existing mills

into fewer, larger concerns. Some new companies, such as the Mosinee Paper Mills Co., the Ward Paper Co. and the Stevens Point Mill, continued to be organized. The paper industry was revolutionized by the creation of new machinery and chemical processes which allowed for a much higher rate of production and a diversification of product line.

By 1905, Wisconsin was the fifth leading state in the production of paper. Many of the early pulp-fed plants produced newsprint and these were crippled by the removal of the tariffs in Canadian newsprint in 1911. Other producers of coarse paper products were hurt in the late 1920's by the rise of the southern paper mills, which offered a less expensive product. However, the Wisconsin mills bounced back by turning to the production of finer paper products and specialty items. In 1940, there were 36 pulp mills and 51 paper mills in operation (Bowman 1940: 6) and Wisconsin was among the top four paper states. By the 1970's, Wisconsin was the foremost producer of paper products in the U.S. and the revenues from the industry rivaled those generated by the State dairy industry. In 1975, there were 40 operating pulp and paper mills (Wisconsin Paper Council n.d.).

Although the Whiting-Plover Paper Mill is one of the oldest standing paper mills in the state, its significance is not primarily architectural. As the architectural historian Mr. Gordon Orr has concluded, the mill represents an assemblage of late 19th and early 20th century mill buildings that have grown and been modified to accept the demands of an expanding industrial plant. To the original blocks, new buildings have been added, as recently as 1985, and new construction is currently underway. The integrity of the older buildings as examples of architectural construction, or industrial design, is no longer extant as their modification has introduced elements foreign to the original construction techniques and materials. Of all the buildings, only Building #5 (1898) retains a substantial amount of its original visual design and interior structural methods. This building represents but a small portion of the total complex. The mill does not appear to possess the architectural significance for inclusion on the National Register of Historic Places solely on the basis of architectural qualities and integrity.

Placing the architecture of the Whiting-Plover Mill in a regional context was rendered difficult by the fact that the mill was unique in being a fine paper mill based on the use of cotton, rather than wood, fiber. The wood pulp mills had different configurations of design relating to their use of wood pulp. Some of the mills were built more than 15 years after the Whiting-Plover Paper Mill and utilized different techniques and materials, such as bolted steel trusses and supports, rather than a wooden post and beam construction. The demands of heavier equipment and higher output led to extensive modifications to the

wood pulp mills and they retain little interior integrity, even less than the Whiting-Plover Paper Mill. On the exterior, the other mills seem to have followed a similar pattern of growth and accretion to that of the Whiting-Plover Paper Mill, except, perhaps, on a larger scale. At most of the mills (with the exception of the Mosinee Paper Mill and the Ward Paper Mill), the few remaining original exterior walls generally face the Wisconsin River and cannot be adequately viewed from points of direct public access. Features such as windows, roofs and doors are usually extensively modified.

In summation, the Whiting-Plover Paper Mill is the best surviving example of a ragstock paper mill on the Wisconsin River, because it is the only one. In the category of paper mills on the Wisconsin River as a whole, it would appear that the interior of the Whiting-Plover Paper Mill has somewhat more interior integrity than others viewed, but only about the same exterior integrity and less than some of the mills, such as the Mosinee Paper Mill and the Ward Paper Co. Mill.

The Whiting-Plover Paper Mill was compared to the Geo. A. Whiting Mill on the Fox River in Menasha. The latter mill was built only four years before the former and by the same individual, for the same function: the production of fine paper products from ragstock. A comparison of the two mills shows many similarities in general layout and in the construction methods and materials used in the original buildings. It appears that the George A. Whiting Mill is a much better example of a late 19th century paper mill than the Whiting-Plover Paper Mill. This relates to the retention of the integrity of interior and exterior features at the Geo. A. Whiting Mill. It is also in terms of the ability to view and appreciate the way the mill was originally laid out. This has almost been entirely obscured at the Whiting-Plover Paper Mill by the construction of later blocks and by the demolition of some earlier buildings.

If the Whiting-Plover Paper Mill has limited significance in terms of architectural style and integrity, it does have significance in terms of the economic and industrial history of the paper industry in the Wisconsin River Valley. The first paper mill on the river was the Centralia Water Power and Paper Company Mill built in 1887 and demolished in 1912. The site of this mill has been commemorated by an historical landmarks sign (1962). The Whiting-Plover Paper Mill was opened only five years later and was the third mill to operate in the Wisconsin River Valley. The second mill was the Wisconsin River Paper and Pulp Mill opened only one year earlier, about one mile to the north of the Whiting-Plover Mill.

The Whiting-Plover Paper Mill also has some significance in terms of its particular product line and methods of operation. While the other mills were producing newsprint, wrapping paper, or other

coarse paper products from pulp, the Whiting-Plover Paper Mill was producing fine paper products from ragstock. The Nekoosa News (1964: 7) noted that the plant is the only cotton content mill on the Wisconsin River. Earlier mills on the Fox River had produced fine paper from ragstock, but the Whiting-Plover Paper Mill appears to have been the first and only mill to use the process on the Wisconsin River. As noted, this had ramifications for the design and expansion of the mill which separates it from the pulp mills.

The Whiting-Plover Paper Mill also gains significance from its association with George A. Whiting. Whiting was a key figure in the Wisconsin paper industry for over 50 years. He participated in many of the early Wisconsin paper companies and was involved in the first three mills on the Wisconsin River. Aside from his role in the paper industry, Whiting was an important figure in early conservation organizations and in local politics in the Fox Valley. Whiting and Burr built the mill in 1892 and Whiting served as its president until his death in 1930.

In summation, the Whiting-Plover Paper Mill has historical significance from its position as one of the early paper mills on the Wisconsin River and its manufacture of fine paper goods, which was not pursued by other early mills in the region.

The preceding discussion of historical significance was submitted to the Wisconsin State Historical Preservation Officer in April, 1988, as supporting documentation to a request for determination of eligibility for inclusion on the National Register of Historic Places.

#### B. Biographical Information on George A. Whiting

The individual most closely associated with the Whiting-Plover Paper Mill was "Col." George A. Whiting. His career parallels the development of the paper industry in Wisconsin, especially in the Wisconsin River Valley.

Whiting was born in Gilboa, New York in 1849. His family moved to Ripon, Wisconsin when he was five. He was educated in both Wisconsin and New York. Whiting returned to Wisconsin in 1865 to seek employment (Lawson 1903: 1192). His first several years were spent in different positions not related to the paper industry.

In 1871, Whiting became one of the individuals involved with the origins of the incipient Kimberly-Clark Co., although his association with that concern was brief. In 1875, he was connected with the Winnebago Paper Mill of Neenah, as secretary and manager. He continued in that post for six years. While at the mill, Whiting became the first Wisconsin papermaker to

manufacture fine book paper (Lawson 1909: 277). Eventually, this firm became the foundation for the Bergstrom Paper Co.

In 1881, Whiting joined William Gilbert in building a paper mill in Menasha. It was not a successful partnership and Whiting bought out his partner to become the sole owner of the George A. Whiting Paper Company, which remained one of his principal interests. This mill, unlike most of the other Fox Valley plants, produced fine paper from ragstock. In 1888, it suffered a disastrous explosion which cost 15 lives. Whiting immediately rebuilt the mill after receiving his insurance settlement following an acrimonious fight with the insurer. Whiting next had an interest in the Centralia Pulp and Water Power Company, the first paper mill on the Wisconsin River. He quickly divested himself of the position of president and was next involved in the development of the Wisconsin River Paper and Pulp Mill south of Stevens Point (Nekoosa News 1964: 6).

In 1892, Whiting and Emmons Burr founded the Plover Paper Co. to manufacture writing paper and other quality paper products. Again, Whiting was involved in a venture which specialized in fine paper-making from ragstock, as opposed to the predominant trade in wrapping paper and newsprint made from pulp fiber, which occupied most of the other paper mills.

Thus, George A. Whiting was associated with the inception of several of the early and largest paper-making firms in Wisconsin, including Kimberly-Clark and the Nekoosa-Edwards Company. He was further associated with other mills which were eventually absorbed, or became part of Consolidated Paper Inc. and the Bergstrom Paper Co. He was further associated with most of the early mills on the Wisconsin River. Whiting can probably be called the dominant figure in the development of the "fine" paper trade, which was overshadowed by the more numerous and large, coarse paper mills. If Dr. N.S. Robinson of Neenah can be considered as the "Father of the paper industry in Wisconsin" (Howard Publishing Co. 1948: 8), then George A. Whiting can perhaps be considered as its father in the Wisconsin River Valley.

Whiting did not limit his energies solely to the paper industry. He was one of the organizers of the First National Bank of Menasha. In 1892, he helped organize the Citizens National Bank of Stevens Point, whose building still stands in the community. He was one of the organizers of the Wisconsin Valley Improvement Co. in May, 1898. This group was a pioneer organization in conservation and environmental concerns and was responsible for the construction of a series of dams to defend against floods and to prevent drought (Howard Publishing Co. 1948: 10). In 1908, Whiting was a delegate to Theodore Roosevelt's conference on the preservation of natural resources. He served both as an alderman and as mayor of the city of Neenah and was active in Republican

politics (Lawson 1903: 1194). Finally, Whiting was interested in aviation and the Whiting Airfield in Stevens Point is a reflection of his influence.

In summation, the Whiting-Plover Paper Mill is associated with one of the most prominent citizens of the central Wisconsin River Valley from the 1880's until his death in 1930.

#### C. History of the Whiting-Plover Paper Company

The Plover Paper Co. was founded by George A. Whiting and Emmons Burr in 1891-1892. It was built on the site of a lumber mill owned by S.A. Sherman. The original buildings of the mill were constructed of brick on a stone foundation at a cost of \$200,000 (Nekoosa News 1964: 7). Unlike most of the other mills in the region, the Plover Paper Mill was designed, from inception, for the production of fine paper products, as opposed to newsprint or coarse wrapping papers. The mill relied on the use of rags, rather than pulp, for fiber. This is reflected in the architecture of the mill.

The firm grew rapidly from an initial capacity of twenty tons of paper per day. The development of a truly fine paper was hampered by the muddy quality of the water from the Wisconsin River. In 1912, Whiting's geologists found a spring, only one-half mile from the mill, which supplied an extremely pure water. This facilitated the production of fine paper (Nekoosa News 1964: 7). In the same year, the name of the firm was changed to the Whiting-Plover Paper Co., to reflect Whiting's dominant role in the organization.

Whiting died in 1930, but the firm continued to grow under the direction of F.A. Oberweiser. He was followed, as director of the mill, by Frank Whiting, George Whiting II and Thomas Leech. In 1964, the mill was purchased by the Nekoosa-Edwards Paper Co. In 1981, it was sold to the Fox Valley Corporation who, in the same year, sold it to the Kimberly-Clark Corporation. Today, the mill is operated as the Whiting Mill of the Neenah Paper Division of the Kimberly-Clark Corporation. True to its original mission, the mill still produces a variety of fine cotton content paper products.

#### D. The Architectural Development of the Whiting-Plover Paper Mill

The development of the Whiting-Plover Paper Mill began with the 1892 construction of the original boiler house, the turbine room and the compressor room, all of which were rebuilt in 1912 and demolished in 1985. The building holding the two original paper machines was also built in 1892 (Fig. 4, #4). This block was rebuilt in 1912 and additional modifications were made in the 1970's, when the windows were bricked up. From the nature of the

production process (as will be discussed), additional structures must have stood on the present locations of Buildings #6, #7 and #17. These buildings appear on the Perrin-Sanborn Map of the mill in 1898.

Another early structure is Building #5. Originally, this building was used to wash, drain and beat the cotton rags used for fiber. This structure is listed in available company records as having been built in 1898. However, if the 1898 date for construction is correct, this structure must have replaced an earlier one, since Building #5 was the location of the original machinery which transmitted water power to the paper mill, and the mill was in operation by 1892. It is also possible that the 1898 date is incorrect and this block was constructed six years earlier. In any case, this portion of the mill was modified in 1922. The windows were bricked up in the 1970's and the floors rebuilt in 1985.

The present loft and reel storage room (Building #3) was also built in 1898. It was originally used for stock preparation.

In 1903, the next round of additions and replacement was begun, including a stock preparation storage room and another stock preparation and storage block. Both buildings replaced earlier structures. They were rebuilt in 1985, including the replacement of the floors and alterations to the roofs. A loft and cutting room was also constructed. Its windows were bricked up in the 1970's.

Between 1911 and 1985, various other additions were made to the mill complex. These are summarized as follows:

- 1908 - Cutting Room - windows bricked in 1970's -  
block enclosed by Building #28 in 1985
- 1911 - Office - demolished in 1985
- 1918 - Storage Room - windows bricked in 1985
- 1918 - High Bay Storage - rebuilt in 1985 with a new  
roof
- 1923 - Raw Material and Operations Office - bricked  
windows in the late 1960's
- 1957 - Trimming Room
- 1985 - Paper Machine Building
- 1985 - New Finishing Room and Office Building.

The mill also includes a number of separate buildings, some of which have been demolished. One structure still extant is the 1912 Spring House.

The available records do not specify the architects and engineers responsible for the late 19th century and early 20th century construction at the mill. No early blueprints survive. However, the layout of the mill was almost certainly designed by George A. Whiting. By 1892, Whiting was recognized as one of the principals in the Wisconsin paper industry, especially in the production of fine paper. He had laid out other mills prior to the development of the Whiting-Plover Mill.

E. The Production Process at the Whiting-Plover Paper Mill - ca. 1898

The production of fine cotton content paper at the Whiting-Plover Paper Mill began with the arrival, by railroad spur, of the rags which would provide the raw materials for the paper. Many of these rags were obtained in the Milwaukee area and shipped to the mill. They were brought to a building which is now the location of Structure #17. The railroad spur led to the second floor of the building which was ground level to much of the rest of the mill. There, local women sorted the rags. They removed unusable rags, buttons, collar stays and other objects. The first and third floors of this building were used for storage.

The sorted rags were sent to a building on which Structure #7 is now located. They were dusted and cut on the second floor (which, as in the first building, was ground level relative to other portions of the mill). The first floor of this building was used to prepare the lime which would be used in the bleaching process.

The rags then moved west to the location of what is now Building #6. The first and second floors of this structure were combined. The rags were boiled there for several hours in a mixture of lime and stock. This cleaned the rags and removed stains or dye.

After boiling, the rags went to the south half of Building #5. There, they were placed in vats for washing and draining. The power for the washers was provided by a series of water wheels which, through a transmission of wooden gears and wheels, brought water power into the mill from the river. The cleaned and drained rags then went back (east) across the northern part of Building #5. This was the location of the beaters, a series of vats in which the rags were agitated to separate out the cotton fiber. These machines were also powered directly by the water wheels in the mill race.

The cotton fiber was now in the form of a slurry, or suspension of fiber and water. This composed 90-99% of the solution. It was introduced into the two paper machines in Building #4. The

solution was poured onto a vibrating wire mesh at the wet end of the long machines. Most of the water was removed through the screen and the agitating belt mixed and intertwined the fibers to produce paper. The incipient paper then travelled through a series of cylinders where more water was removed by steaming and pressing. Heavy calander rolls then picked up the paper and ironed it to give a smooth finish. At the dry end of the machines, called Fourdriniers, the paper was taken up on rolls to be cut or subjected to additional finishing. The Fourdrinier machines required considerable ventilation and drainage (Wisconsin Historic Preservation Division 1986: 6-9 and 6-10). The massive machines occupied the whole of the first floor. The basement level was divided between the drying train and the repairing and case manufacturing departments.

Finally, the paper reached Building #3. There, on the first floor, the paper was finished and cut. The second floor served as a storage area.

The other structures associated with the early operation of the mill included the boiler house, which provided heat to the paper mill. It was one-story in size with a 130' high smokestack. The heat was provided to the various blocks of the mill by a Sturtevant System. Steam heat was provided to the office and finishing room. The fuel for the boiler system was wood. Lighting was at least partially provided, even by 1898, by electric lights.

The importance of water in the production of paper cannot be overstated. In the early years of the mill operation, the production of fine paper was hampered by the high silt content of the Wisconsin River water. It was difficult to use this water to clean the rags and then process the liberated fiber into a fine, white paper. The discovery of a highly pure spring water source in 1912 was a major boon to production at the mill. The water was pumped from a well located about one-half mile from the mill building.

The manufacturing system and production train at the mill has remained essentially similar through time. Around 1980, the last use of water power was discontinued. Also, the total reliance on cotton fiber was abandoned and other fiber was brought in, to mix with the cotton fiber. However, the Whiting-Plover Mill has never processed wood fiber for use in the production of paper.

Other major changes to the mill included the addition of a series of finishing, cutter and storage rooms on the northern side of the mill. By 1918, Building #3, which had served all of these functions until 1902, was joined by Building #1, #2, and #11. This was necessitated by the rise in production and by the

diversification of products which required more emphasis on finishing paper.

A review of various documents and discussions with plant personnel has indicated that no functioning equipment remains from the early days of operation of the mill. The wooden tooth ring gears which linked to the water wheels in Building #5 have been preserved at the mill, but are not in use. The original paper machines are no longer present. The author was informed that the existing paper machines contain some components which may date back to the late 1920's or 1930's. However, these are components and frame elements which make up minor portions of the essentially modern machines.

## II. A DESCRIPTION OF THE WHITING-PLOVER PAPER MILL

### A. Exterior Features

From the Visitor's Parking Lot on the north, the Whiting Mill appears as a modern, late 20th century building, with a facade of precast exposed aggregate panels, set in a pleasantly landscaped area. However, the western portion of the mill and portions of the southern facade reveal that portions of the original late 19th-early 20th century construction have survived.

The early blocks (1892-1923) of the mill can be described as utilitarian, commercial mill structures built of brick. The brickwork is common bond with a header course usually every sixth course, although this does vary. The construction technique is typical of the time for this type of building, offering a maximum of strength with a minimum of architectural and engineering complexity. In a gesture to detail, the building walls are capped with a corbelled brick cornice. In addition to the obvious element of design, the practical consideration of shedding water away from the building walls is accomplished.

The upper stories of the early blocks had high windows with segmented relieving arches of brick. Most of these, and various doors, have been bricked up with concrete block or glass block. Smaller, first story windows are similar in form and have mostly received the same modern treatment. This was primarily done for reasons of energy conservation. Several of the first story windows on the west side of Building #4 are possibly surviving examples of the original window forms. A lunette window or vent was located at the western end of Building #5. In the 1923 block (Building #13), the more recent age is seen in the presence of steel frame windows, not found in the earlier blocks.

The Whiting-Plover Paper Mill was built directly on bedrock. The foundation is composed of limestone fragments in mortar. Exposed

foundation elements are now partially covered by gunite grout, which is crumbling in areas. In early photographs, the various blocks had low-pitched gable roofs. More recent additions have flat roofs which appear to also have been placed on some of the earlier buildings.

Modern additions have obscured the exterior surfaces of some of the earlier portions of the mill. These include all of Building #1, the south wall of Building #2, the eastern and southern walls of Building #4, a portion of the southern wall of Building #5 and the eastern wall of Building #6. Recent construction has enclosed a portion of the north wall of Building #5, the remaining exposed portion of the west wall of Building #4, the north wall of Building #4 and the north wall of Building #2.

In summation, the exterior of the Whiting-Plover Paper Mill presents a mixed picture of late 19th-early 20th century and mid to late-20th century architecture. Earlier exterior walls are generally facing towards the river and some are difficult or impossible to view from public access. These earlier walls have generally been altered, especially in terms of the fenestration with the bricking up of the high windows found in the second and third stories. It is also difficult to view the mill in terms of the layout and function of the late 19th century paper mill. This is due to the demolition of some of the old buildings and the enclosure of others by much later construction.

#### B. Interior Features

The continual need to create spaces for manufacturing functions, whose requirements changed with technological improvements, has prompted many interior modifications to the Whiting-Plover Paper Mill. The original units of the mill are of typical mill construction: large wooden columns, malleable iron and steel column caps and girder fittings, heavy timber girders and beams and heavy plank floors and ceilings. Such construction has its limitations in terms of large open spaces for equipment (Kidder 1916, Gay and Parker 1932, Crane 1947).

Through time, the plant's owners have frequently replaced columns, girders and beams with structural steel members in the older units including Building #2 (1903), Building #3 (1898) and Building #4 (1892). A curious mixture of structural elements is now present, with elements dating from the original construction, and segments newly reinforced with steel elements or completely replaced by structural steel. The wood plank floors and ceilings have been mostly replaced with concrete. The top floor of Building #4, with its fine wood flooring, is an exception. The ingenuity of mill engineers to modify the spaces in such a manner that it can still provide for an active manufacturing process is remarkable in this structure.

Some of the blocks, such as Building #6 (1903), Building #7 (1903) and Building #17 (1918), have undergone extensive modification. These units have been effectively rebuilt with little remaining of the original construction, with the exception of some exterior walls. New lightweight, prefabricated roof planking has replaced the original wood plank roofs. Open web steel joists have replaced the wood girders and beams and the appearance of an almost totally new construction has been created.

In some instances, the calculated loads for the girders may have been more than the members were capable of supporting and original structural reinforcement was provided. In Building #1 (1908), a system utilizing two metal structural compression braces near the third points of the span is on the underside of the girder, and two parallel tension rods run from either beam end to the posts. Several other locations in Building #3 (1898) are reinforced in a manner similar to that which will be described for Building #5.

The most striking building in the complex is Building #5 (1898), wherein the greatest amount of original mill construction has been preserved. This, no doubt, is the result of the fact that the building is one less story in height than the other early blocks and was constructed with a larger clearspan. This allowed for a floor with fewer interruptions from columns. The roof structure, towering to a gable ridge high above the floor, is constructed with heavy timber girders, trussed in a manner described by Kidder (1916) and similar to the design developed by 1851 by Albert Fink for bridge work (Danko 1976). This design used a solid compression post at the mid-span of the underside of the girder and tension rods with turnbuckles from either end passing under the compression post. The essential elements of the heavy timber construction were retained, but a greater roof span resulted. The walls and roof have remained very much unchanged, although new floors have been substituted.

The structure beneath the first floor of the mill still shows a great deal of the flume work that must have provided some of the water power for the original mill. Large brick arches for floor support are still very much in evidence. Similarly, large semi-circular brick arches remain beneath the floor of Building #4 (1898), although many structural replacements have been made. Some of the heavy timber columns remain and they display a chamfered edge along most of the column's length, as a fire safety consideration. Due to the substantial size of the columns and girders used in construction, and because they may not have been thoroughly seasoned before their installation, many large seasoning splits are in evidence. In a few instances, there are steel channels bolted through the wood member to reinforce it.

In summation, the interior of the Whiting-Plover Paper Mill is a considerable mixture of original and replacement structural

elements. When in building #5, especially the top floor, it is easy to visualize the original mill. In buildings #1 through #4, original elements of construction are found side-by-side with replacement elements which date from the early to late 20th century. Wooden posts and beams are present, next to bolted steel beams, next to later welded beams. Buildings such as #6, #7 and #17 have been extensively modified and retain little historic integrity outside of portions of the brick walls. In all of the blocks, there is evidence of modification in the form of blocked up windows and doors and new doors cut to link blocks. New stairways have been built in some locations, as indicated by Plate #15, which shows a stairway landing cutting through the former location of a window.

It may be noted that while the interior and exterior features of the Whiting-Plover Paper Mill are generally similar to other paper mills there are some significant differences based on the development of the Whiting-Plover Paper Mill as a fine paper mill utilizing ragstock, rather than wood pulp. The pulp mills required rooms to cut and grind or chip the wood to a size where it could be introduced to beaters or chemical vats to release the fiber. Further, the wood pulp mills all began in the production of newsprint and wrapping papers, which required volume production, as opposed to the Whiting-Plover Paper Mill which produced smaller amounts of fine paper from rags. Thus, the other mills on the Wisconsin River Valley were originally (and mostly still are) larger than the Whiting-Plover Paper Mill. The pulp paper mills are generally more extensively modified on the interior and more strongly built than the Whiting-Plover Paper Mill. Discussions on this question with various engineers and personnel from the mills suggested that the type of equipment used in making paper from wood fiber, as opposed to ragstock, is much heavier, which encouraged the gutting of the original mill structures and the replacement of wood floors, structural supports and ceilings with concrete and welded or bolted steel.

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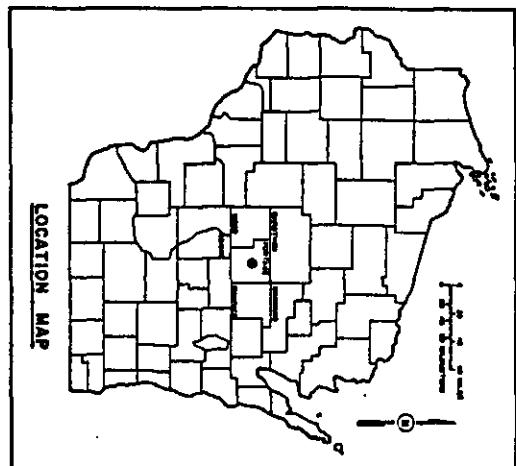
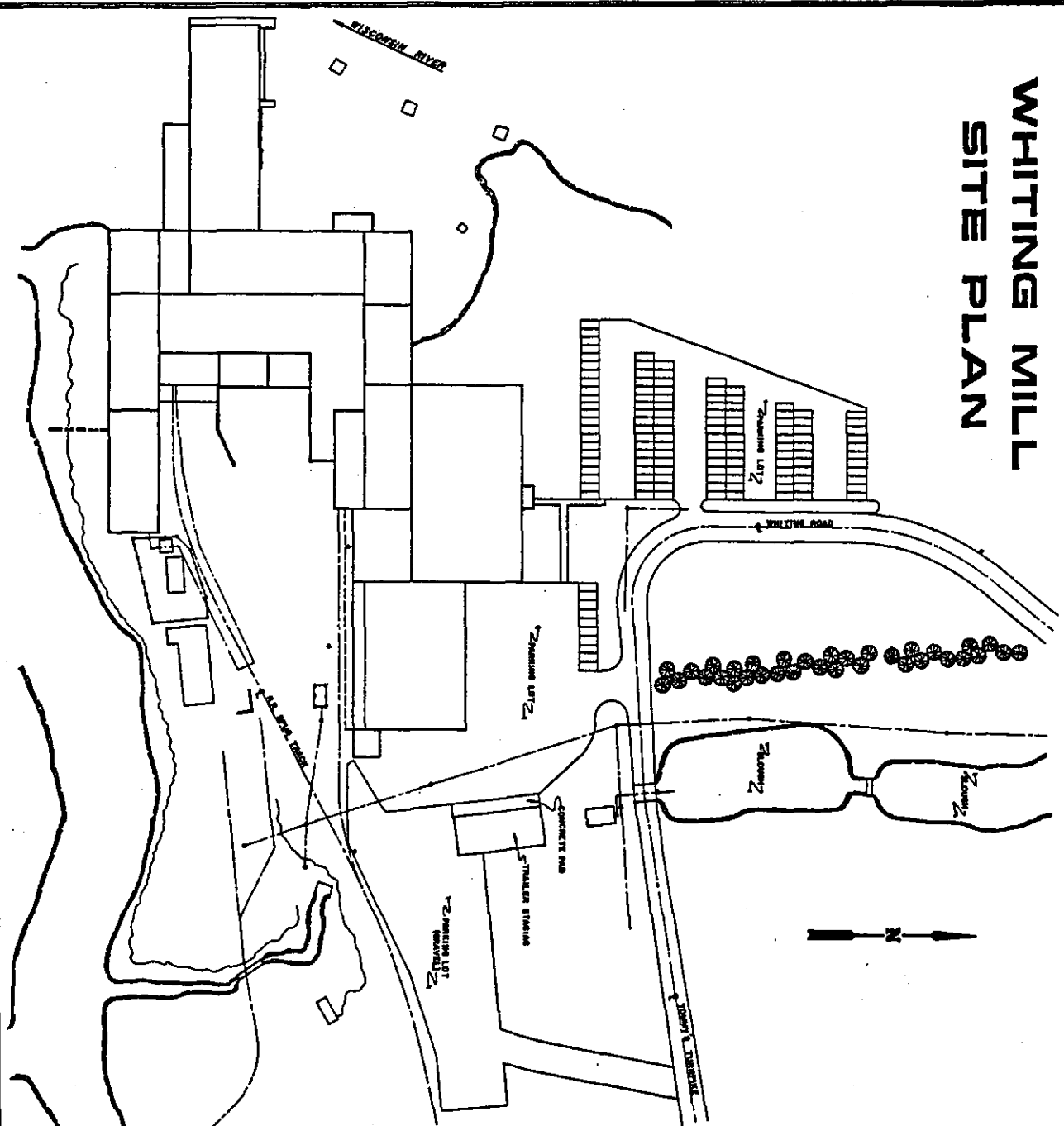
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# WHITING MILL SITE PLAN



The Whiting Mill and Mill Pond are shown on the map.

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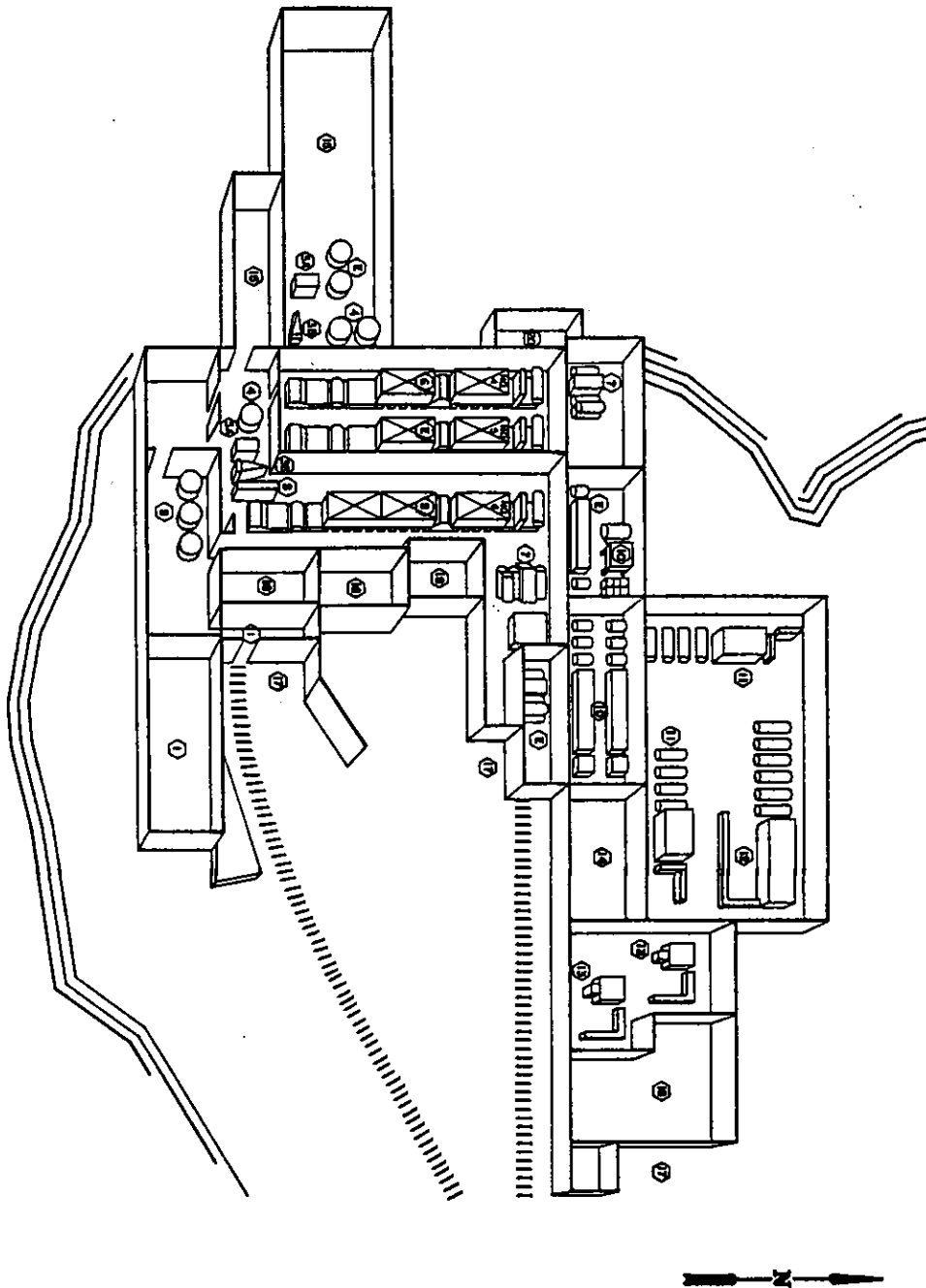
Kimberly Clark Corporation  
Whiting Mill, Portage County, Wisconsin

KIMBERLY CLARK CORPORATION - SITE PLAN  
WHITING MILL, PORTAGE COUNTY, WISCONSIN

SHEET  
1 of 3

ENGINEERING  
W-1-56

# WHITING MILL LAYOUT OF PAPERMAKING MACHINERY



## PROCESS LOCATION & DESCRIPTION

- ① SAW MATERIAL RECEIVING/STORAGE (2 LOCATIONS)
- ② HYDRO PULPERS (2 LOCATIONS)
- ③ OILER REFINER (2 LOCATIONS)
- ④ JOURNAL REFINER (2 LOCATIONS)
- ⑤ STOCK CRACKERS (2 LOCATIONS)
- ⑥ CLEANERS
- ⑦ PAPER MACHINE (3 LOCATIONS)
- ⑧ WINDERS (2 LOCATIONS)
- ⑨ REWINDERS
- ⑩ LEFT
- ⑪ SHEETERS (2 LOCATIONS)
- ⑫ PRECISION CUT SIZE MACHINES (2 LOCATIONS)
- ⑬ PRECISION POLIO SHEETERS MACHINE
- ⑭ SKULDLINE THINNERS (2 LOCATIONS)
- ⑮ IN-PROCESS MATERIAL STORAGE
- ⑯ PULP PILES STORAGE
- ⑰ SHIPPING
- ⑱ TRUCK DOCKS (2 LOCATIONS)
- ⑲ BOILERS (2 LOCATIONS)
- ⑳ ELECTRICAL CONTROL ROOM (MILL POWER DISTRIBUTION)
- ㉑ QUALITY TEST STATION

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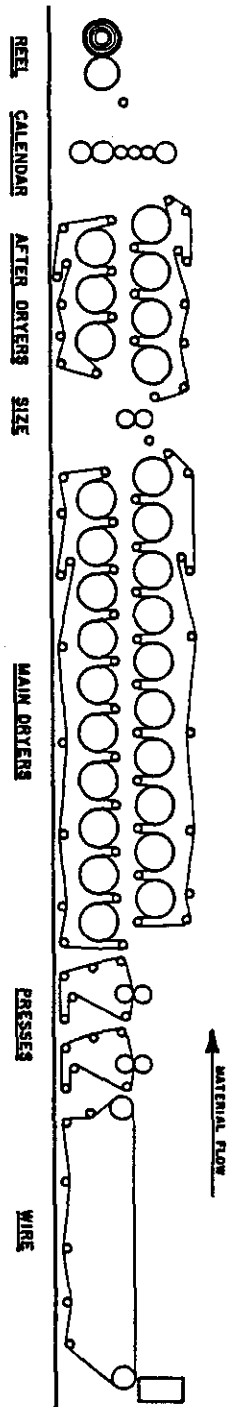
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Whiting, Portage County, Wisconsin

KIMBERLY CLARK CORPORATION - LAYOUT OF PAPERMAKING MACHINERY  
WHITING MILL, PORTAGE COUNTY, WISCONSIN

SHEET  
3 - 3

HISTORIC AMERICAN  
ENGINEERING RECORD  
WI-56

# TYPICAL FINE PAPER MACHINE



DEVELOPED BY:

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PORTAGE COUNTY, WISCONSIN  
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KIMBERLY CLARK CORPORATION - TYPICAL FINE PAPER MACHINE  
WHITING MILL, PORTAGE COUNTY, WISCONSIN

1957  
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